REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested. Claims 19-37 are pending.

In the outstanding Office Action, the specification was objected to for not including an Abstract; Claims 19, 25-29, and 35-37 were rejected as being obvious over Trautner et al (U.S. Patent No. 4,106,069, hereinafter Trautner) in view of Breitenbach et al (U.S. Patent No. 4,785,138, hereinafter Breitenbach); Claims 20-23 were rejected as being unpatentable over Trautner in view of Breitenbach and in further view of Elton et al (U.S. Patent No. 5,036,165); Claim 24 was rejected as being unpatentable over Trautner in view of Breitenbach and in further view of Penczynski et al (U.S. Patent No. 3,959,549); Claims 30-34 were rejected as being unpatentable over Trautner in view of Breitenbach and in further view of Platzer (U.S. Patent No. 4,121,148).

An Abstract is provided herewith on a separate sheet of paper as requested. No new matter is added.

Turning to the rejection of Claims 19, 25-29 and 35-37, Applicants respectfully traverse the rejection. Claim 19 is directed to an alternating current rotary electric machine configured to be connected directly to a distribution or transmission network. The electric machine includes an electric winding having an electric conductor, a first layer that exhibits semiconducting properties, a solid insulating layer surrounding the first layer, a second layer that exhibits semiconducting properties that surrounds the insulating layer. The machine also includes a brushless excitation system that is switchable between positive and negative excitation modes and configured to excite the alternating current in the electric rotary machine.

The outstanding Office Action asserts that Trautner substantially teaches the claimed invention except that it does not show a structure of the winding. However it is first noted that Trautner, while it is directed to a brushless synchronous machine, the machine is not configured to be connected directly to a distribution or transmission network, therefore it does not suffer from the same problems that the present invention has been made to address. (See e.g. specification (Substitute Specification) page 2, lines 13-17). Devices that are able to be connected directly to the power grid, operate at substantial voltages, and in the case of excitation systems, such devices need to be able to handle peak voltage factors greater than three times the rated load excitation voltage (see e.g. specification, page 2, lines 7-9). There is nothing however about Trautner, indicating that it operates at transmission level voltages or is anything but a protection system for a brushless synchronous machine. Moreover, Claim 19 expressly states that the brushless excitation system must be configured to excite the alternating current rotary electric machine, which in the preamble of Claim 19 explains is configured to be connected directly to a distribution or transmission network. There is nothing in Trautner to indicate that such a device would be able to operate at distribution or transmission voltage levels. Additionally, the outstanding Office Action recognizes that Trautner does not disclose the winding of the presently claimed invention.

The outstanding Office Action attempts to cure the deficiency in Trautner, by asserting that the linear winding in Breitenbach could be used in combination with Trautner, for "the purpose of minimizing thermal aging and avoiding detaching of the layer from the conductor due to bending or axial stress". However, it is respectfully submitted that the winding in Breitenbach is configured for use in a linear motor, and if used in a rotary electric machine, would be inoperable, because the "sheathing (10) is of high electric conductivity" (Breitenbach column 1, line 64). However, if one attempted to include a conductor with an

outer conductive sheathing 10 like that in Breitenbach in a rotary electric machine, the conductive sheathing would be exposed to large magnetic fields within the machine and very significant induced currents would flow on the outer surface of the conductive sheathing 10, and would be directly grounded to the stator. Consequently, such a device would be completely inoperable when used in rotary electric machine context.

The winding in Breitenbach is not used in a rotary electric machine, but rather in a linear motor (see e.g. Breitenbach), and thus works in a suitable fashion in the linear motor. Consequently, it is respectfully submitted that no matter how Trautner is combined with the linear motor winding of Breitenbach, the combination does not teach or suggest an electric winding for an AC rotary electric machine that can be directly connected to a distribution or transmission network as claimed. It is respectfully submitted that the outstanding Office Action has not created a *prima facie* case of obviousness as there is neither a winding in either reference that would be operable in the claimed rotary machine, or a brushless excitation system that would be suitable for use in a rotary electric machine that is connected directly to a distribution or transmission network. Therefore it is respectfully requested that Claim 19, as well Claims 25-27 patentably define over the asserted prior art. It is also respectfully submitted that the invention defined by Claims 28, 29 and 35-37 patentably define over the asserted prior art for substantially the same reasons as discussed above with regard to Claim 19.

Claims 20-23 stand rejected as being unpatentable over Trautner in view of Breitenbach and in further view of Elton. The outstanding Office Action recognizes that neither Trautner nor Breitenbach disclose that the second layer is connected to a source of a predetermined potential and asserts Elton for this feature. However, it should be noted that Elton is a divisional application of US Patent No. 4,853,565, which is incorporated by

reference (col. 1, lines 5-9) and thus contains the same disclosure as US Patent No. 4,853,565. Since US Patent No. 4,853,565 contains a more complete disclosure of Elton, all further references to Elton will be based on US Patent No. 4,853,565.

The invention of Elton is about an insulator material, namely, a pyrolyzed glass fiber layer that may be used in a variety of applications. For example, Elton describes surrounding conventional bar-type windings of an electric machine with a layer of pyrolyzed glass fiber in electrical contact with ground to minimize corona discharge by providing a path to ground to bleed off built up charges.[1] Elton also describes using a semiconducting pyrolyzed glass fiber layer to equalize the potential on the exterior of the insulator of a cable.[2] Elton describes yet another application of the pyrolyzed glass fiber layer as a way to protect electronic components by coating the exterior surface of a housing with the semiconducting pyrolyzed glass fiber.[3]

However, Elton does not teach or suggest that the cable shown in Figure 7 could be used as a winding in a rotary electric machine. On the other hand, the cable in Elton is but one of several exemplary applications of the pyrolyzed glass fiber layer described in Elton. It appears to be completely coincidental that Elton uses a winding and also a cable (as well as a chassis for an electric circuit) as exemplary uses for the pyrolyzed glass insulator material. There is nothing in Elton to suggest a desirability of using the cable shown in Figure 7 of Elton as a substitute for a conventional winding in a rotary electric machine.

The "invention" in Elton is the pyrolyzed glass fiber layer. Elton describes a process of immersing the winding portions in a bath of resin and vacuum pressure impregnating

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[1]See Elton, column 2, lines 44-48, and Figures 1-6.

[2]See Elton, column 7, lines 12-17, and Figure 7.

[3]See Elton, column 7, lines 38-43, and Figure 8.

(VPI) the resin in the winding.[4] The VPI process results in a cured resin having no voids or gaps between layers.[5] The cured resin is a hard material, which is an important observation, since the cable in Elton would be too stiff to be wound in slots of a rotary machine's stator.

The cable shown in Figure 7 of Elton includes two pyrolyzed glass fiber layers, layers 104 and 110.

> The internal grading layer 104 is a semi-conducting pyrolyzed glass fiber layer as disclosed herein. . . . An insulation 106 surrounds internal grading layer 104. On the external surface of insulation 106, a semi-conducting pyrolyzed glass fiber layer 110 equalizes the electrical potential thereon.[6]

As further evidence that the cable shown in Figure 7 Elton would not be suitable as a winding in a rotary electric machine, having two pyrolyzed glass fiber layers would cause the cable to be prohibitively stiff and unable to be bent into a winding. Accordingly, while Elton describes how to provide a pyrolyzed glass fiber layer for a bar-type winding, Elton does not teach or suggest that the cable of Figure 7 could be used for such a purpose, especially since the cable in Elton would be stiff, not flexible.

For a proper obviousness rejection based on a combination of references, there must be evidence in the references themselves showing that there was a motivation to combine the references, or from what was known to one of ordinary skill in the art, not merely that it was feasible to combine the references. It is respectfully submitted that there is no evidence (1) of a desirability to modify the winding used in Trautner, (2) to suggest that the cable described in Elton could be used as a winding in a rotary electric machine nor (3) that one of ordinary skill in the rotary electric machine art would have a reasonable expectation of

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[4] See Elton, column 4, lines 23-25.

[5] See Elton, column 4, lines 27-30.

[6] See Elton, column 7, lines 19-26.

success if the machine in Trautner was modified to operate with cable windings that operate at high voltage.

Consequently, the motivation asserted in the outstanding Office Action is unsupported by any evidence indicating that the proposed combination of Trautner and Elton is desirable or technically feasible. Accordingly, it is respectfully submitted that one of ordinary skill in the electric machine art would not have been motivated to combine the cable in Elton with the rotary electric machine in Trautner.

With regard to Claim 24, it is respectfully submitted that the additional reference of Penczynski, offers nothing to cure the deficiencies with regard to Trautner and Breitenbach, namely none of the three references disclose a winding as claimed, or a rotary electric machine that is suitable in use in directly connecting to a distribution or transmission network. Consequently, it is respectfully submitted that Claim 24 patentably defines over the asserted prior art.

With regard to Claims 30-34, the outstanding Office Action recognizes that neither Trautner nor Breitenbach discloses over-voltage protection mechanism, control equipment, or that the control equipment is configured to change a polarity of the current converters. However, the outstanding Office Action asserts Platzer for this feature. Platzer does not disclose the features that are also absent in Trautner and Breitenbach, mainly that there is an operational winding, as claimed, that would be suitable for use in a rotary electric machine, that could be configured to be directly connected to a transmission or distribution network. Consequently, it is respectfully submitted that Claims 30-34 also patentably define over the asserted prior art.

The present application is therefore believed to be in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully submitted,

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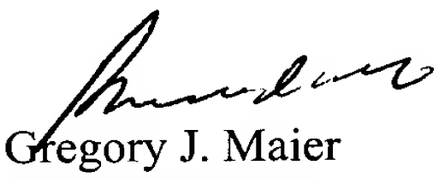

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IN THE ABSTRACT OF THE DISCLOSURE

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